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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,518	04/20/2006	Tohru Yamaoka	0719710557	3716

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EXAMINER	
ENSEY, BRIAN	

ART UNIT	PAPER NUMBER
2614	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/576,518	YAMAOKA ET AL.	
	Examiner	Art Unit	
	BRIAN ENSEY	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/24/08 & 12/11/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsuo Japanese Patent Publication 09-283373 in view of Johannsen et al. U.S. Patent No. 6,859,542.

Regarding claim 18, Mitsou discloses an electret comprising: a charged silicon oxide film (See Fig. 1 and translation abstract and paragraph 0001). Mitsou does not expressly disclose a first insulating film formed to cover upper and side surfaces of the silicon oxide film; and a second insulating film formed to cover a lower surface of the silicon oxide film. However, the use of multi-layered diaphragms in condenser microphones is well known in the art and Johannsen teaches a silicon oxide diaphragm (11b) and a first insulating film (11a) formed to cover upper surface of the silicon oxide diaphragm; and a second insulating film (11c) formed to cover a lower surface of the silicon oxide diaphragm(See Johannsen Fig. 3 and col. 3, lines 25-67). Johannsen further discloses coating the entire diaphragm with a hydorphobic layer to prevent moisture from causing stiction of the diaphragm (See abstract). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to use the insulating layers of Johannsen on all the diaphragm surfaces of Mitsou to prevent moisture from affecting the operation of the diaphragm member.

Regarding claim 19, the combination of Mitsou in view of Johannsen further discloses each of the first and second insulating films is a silicon nitride film (See Johanssen col. 7, lines 9-14).

Regarding claim 20, the combination of Mitsou in view of Johannsen further discloses the silicon oxide film has been charged by a plasma discharge or a corona discharge (See Mitsou translation paragraph 0017).

Claims 21-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsuo in view of Johannsen et al. in view of Yasuno et al. U.S. Patent No. 6,731,766 in further view of Mullenborn et al..

Regarding claim 21, Mitsou discloses an electret condenser comprising: a charged silicon oxide film (See Fig. 1 and translation abstract and paragraph 0001). Mitsou does not expressly disclose a multilayer structure composed of a second electrode, a first insulating film, and a second insulating film formed to cover a lower surface of the silicon oxide film. However, the use of multi-layered diaphragms in condenser microphones is well known in the art and Johannsen teaches a silicon oxide diaphragm (11b) and a first insulating film (11a) formed to cover upper surface of the silicon oxide diaphragm; and a second insulating film (11c) formed to cover a lower surface of the silicon oxide diaphragm (See Johannsen Fig. 3 and col. 3, lines 25-67). Johannsen further discloses coating the entire diaphragm with a hydorphobic layer to prevent moisture from causing stiction of the diaphragm (See abstract). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to use the insulating layers of Johannsen on all the diaphragm surfaces of Mitsou to prevent moisture from affecting the operation of the diaphragm member. Johannsen further discloses an electret condenser comprising: a fixed film having a first electrode (3); and a vibrating film (4) disposed with an air gap interposed between itself and the fixed film, wherein the vibrating film has a multilayer structure composed of a an oxide film (4), a first insulating coating (5), and a second insulating

coating (5), upper and side surfaces of the silicon oxide film are covered with the first insulating coating, and a lower surface of the silicon oxide film is covered with the second insulating coating (See Johannsen Fig. 3 and col. 3, lines 25-67). Johannsen does not expressly disclose the vibrating film comprising a second electrode and the insulating coating is specifically a film wherein the silicon oxide film is disposed between the first and second electrodes. However, the use of a second electrode on the vibrating film diaphragm is well known in the art and Yasuno teaches an electret condenser comprising a fixed film having a first electrode (5) and a vibrating film (3) disposed with an air gap interposed between itself and the fixed film and the vibrating film has a multilayer structure composed of a charged silicon oxide film (32) and a second electrode (31). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the multilayered vibrating film of Yasuno in the electret condenser of Johannsen to provide a highly reliable condenser microphone easy to assemble and strong against water and humidity (See Figs. 3 and 4 and col. 2, lines 34-45). Johannsen does not expressly disclose the insulating coating is specifically a film wherein the silicon oxide film is disposed between the first and second electrodes. However, the use of a film to seal a multilayered vibrating film is well known in the art as taught by Mullenborn (See Fig. 1 and col. 2, lines 6-9). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the film type coating of the multilayered vibrating film structure as taught by Mullenborn in the condenser of Johannsen to accurately control the sensitivity of the microphone vibrating member (See Mullenborn abstract).

Regarding claim 22, the combination of Mitsuo in view of Johannsen in view of Yasuno in further view of Mullenborn further discloses the lower surface of the silicon oxide film is

covered with the second insulating film with the second electrode interposed therebetween (See Mullenborn Fig. 1 and col. 2, lines 6-9 and abstract).

Regarding claim 23, the combination of Mitsuo in view of Johannsen in view of Yasuno in further view of Mullenborn further discloses the vibrating film is formed with a plurality of through holes each reaching the air gap and a surface of the silicon oxide film which forms each of respective inner wall surfaces of the plurality of through holes is covered with the first insulating film (See Johannsen col. 3, lines 10-24).

Regarding claim 24, the combination of Mitsuo in view of Johannsen in view of Yasuno in further view of Mullenborn further discloses each of the first and second insulating films is a silicon nitride film (See Mullenborn col. 2, lines 6-9). .

Regarding claim 25, the combination of Mitsuo in view of Johannsen in view of Yasuno in further view of Mullenborn further discloses each of the first and second electrodes is made of aluminum, an aluminum alloy, silicon, polysilicon, gold, or a refractory metal (See Johannsen col. 7, lines 9-25).

Regarding claim 26, the combination of of Mitsuo in view Johannsen in view of Yasuno in further view of Mullenborn further discloses an area of the second electrode is smaller than an area of the silicon oxide film (See Yasuno Fig. 3).

Regarding claim 27, the combination of Mitsuo in view of Johannsen in view of Yasuno in further view of Mullenborn further discloses the silicon oxide film has been charged by a plasma discharge or a corona discharge (PECVD, See Mullenborn col. 1, lines 48-51).

Regarding claim 28, Mitsou discloses an electret condenser comprising: a charged silicon oxide film (See Fig. 1 and translation abstract and paragraph 0001). Mitsou does not expressly disclose a multilayer structure composed of an electrode film, a first insulating film, and a second insulating film formed to cover a lower surface of the silicon oxide film. However, the use of multi-layered diaphragms in condenser microphones is well known in the art and Johannsen teaches a silicon oxide diaphragm (11b) and a first insulating film (11a) formed to cover upper surface of the silicon oxide diaphragm; and a second insulating film (11c) formed to cover a lower surface of the silicon oxide diaphragm (See Johannsen Fig. 3 and col. 3, lines 25-67). Johannsen further discloses coating the entire diaphragm with a hydorphobic layer to prevent moisture from causing stiction of the diaphragm (See abstract). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to use the insulating layers of Johannsen on all the diaphragm surfaces of Mitsou to prevent moisture from affecting the operation of the diaphragm member. Johannsen further discloses an electret condenser comprising: a semiconductor substrate (2) having a region removed to leave a peripheral portion thereof; and a vibrating film (4,5) formed on the semiconductor substrate to cover the region, wherein the vibrating film has a multilayer structure composed of an silicon oxide film (4), a first insulating coating (5), and a second insulating coating (5) (See Johannsen Fig. 3 and col. 3, lines 25-67). Johannsen does not expressly disclose the vibrating film comprising an electrode film. However, the use of a second electrode on the vibrating film diaphragm is well known in the art and Yasuno teaches an electret condenser comprising a fixed film having a first electrode (5) and a vibrating film (3) disposed with an air gap interposed between itself and the fixed film and the vibrating film has a multilayer structure composed of a charged silicon oxide film (32) and a

second electrode (31). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the multilayered vibrating film of Yasuno in the electret condenser of Johannsen to provide a highly reliable condenser microphone easy to assemble and strong against water and humidity (See Figs. 3 and 4 and col. 2, lines 34-45). Johannsen does not expressly disclose the insulating coating is specifically a film. However, the use of a film to seal a multilayered vibrating film is well known in the art as taught by Mullenborn (See Fig. 1 and col. 2, lines 6-9). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the film type coating of the multilayered vibrating film structure as taught by Mullenborn in the condenser of Johannsen to accurately control the sensitivity of the microphone vibrating member (See Mullenborn abstract).

Regarding claim 29, the combination of Mitsuo in view of Johannsen in view of Yasuno in further view of Mullenborn further discloses the lower surface of the silicon oxide film is covered with the second insulating film with the electrode film interposed therebetween (See Mullenborn Fig. 1 and col. 2, lines 6-9 and abstract).

Regarding claim 30, the combination of Mitsuo in view of Johannsen in view of Yasuno in further view of Mullenborn further discloses the electrode film is disposed between the semiconductor substrate and the silicon oxide film (See Mullenborn Fig. 1 and col. 2, lines 6-9 and abstract).

Regarding claim 31, the combination of Mitsuo in view of Johannsen in view of Yasuno in further view of Mullenborn further discloses each of the first and second insulating films is a silicon nitride film (See Mullenborn col. 2, lines 6-9).

Regarding claim 32, the combination of Mitsuo in view of Johannsen in view of Yasuno in further view of Mullenborn further discloses the electrode film is formed inside the region in non-overlapping relation with the semiconductor substrate (See Johanssen Fig. 3).

Response to Arguments

Applicant's arguments with respect to claims 18-32 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN ENSEY whose telephone number is (571)272-7496. The examiner can normally be reached on Monday - Friday 6:00 AM - 2:30 PM.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
P.O. Box 1450
Alexandria, Va. 22313-1450

Or faxed to:

(571) 273-8300, for formal communications intended for entry and for informal or draft communications, please label "PROPOSED" or "DRAFT".

Hand-delivered responses should be brought to:

Customer Service Window
Randolph Building
401 Dulany Street
Arlington, VA 22314

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on 571-272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Brian Ensey/
Primary Examiner, Art Unit 2614
February 26, 2009